

## Questionnaire

### **Evaluation of conceptual model and predictors of faecal sludge dewatering performance in Senegal and Tanzania**

Barbara J. Ward<sup>1,2,\*</sup>, Jacqueline Traber<sup>1</sup>, Amadou Gueye<sup>3</sup>, Bécaye Diop<sup>3</sup>, Eberhard Morgenroth<sup>1,2</sup>, Linda Strande<sup>1</sup>

<sup>1</sup>*Eawag, Swiss Federal Institute of Aquatic Science and Technology, 8600 Dübendorf, Switzerland*

<sup>2</sup>*Institute of Environmental Engineering, ETH Zurich, 8093 Zurich, Switzerland*

<sup>3</sup>*Delvic Sanitation Initiatives, Dakar, Senegal*

\*Corresponding: Barbara J. Ward, Eawag, Swiss Federal Institute of Aquatic Science and Technology, Überlandstrasse 133, 8600 Dübendorf, Switzerland, Email: [barbarajeanne.ward@eawag.ch](mailto:barbarajeanne.ward@eawag.ch), Tel: +41 58 765 5290.

**Questions for Delvic observer**

1. What is the origin/source of the faecal sludge? (If truck contains sludge from multiple sources, select all that apply)

- Household
- School
- Factory
- Office building (includes municipal offices)
- Hotel
- Restaurant
- Church
- Public toilet
- Other (specify): \_\_\_\_\_

2. Describe the onsite collection and storage system:

2.1 How would you classify this system?

- Septic tank
- Cesspit
- Pit latrine
- Other (specify): \_\_\_\_\_

2.2 Describe the system's lining:

- Fully lined (watertight)
- Partially lined (water permeable)
- Unlined

2.2.1. If fully or partially lined, what material is the lining made of?

- Concrete
- Fiberglass
- PVC or plastic
- Brick
- Stone
- Cinderblocks
- Wood
- Other (specify): \_\_\_\_\_

2.3 Does the system drain liquid effluent out of the tank?

- Yes
- No

2.3.1 If Yes, where does the tank drain to?

- Sewer
- Leach pit
- Open drain
- Other (specify): \_\_\_\_\_

2.4 Does the system have multiple chambers?

- Yes
- No

2.4.1 If Yes, how many chambers?

- 2
- More than 2

2.5 Provide as much detail about the containment system as possible:

---

---

3. In your opinion, do you think that the answers to the survey questions given by the customer and truck driver are correct?

Yes

No

If No, why not?

---

---

---

### **Questions to customers of emptying services**

1. Describe toilet users (select appropriate questions for facility type)

1.1 Household

How many inhabitants in household? \_\_\_\_\_

How many inhabitants leave the household during the day (e.g. for work or school)? \_\_\_\_\_

1.2 School

How many students and staff? \_\_\_\_\_

How many days per week is the school open? \_\_\_\_\_

1.3 Factory

How many employees? \_\_\_\_\_

How many days per week is the factory open? \_\_\_\_\_

1.4 Office building

How many workers? \_\_\_\_\_

How many days per week is the office open? \_\_\_\_\_

1.5 Hotel

How many guests per week? \_\_\_\_\_

1.6 Restaurant

How many customers per day? \_\_\_\_\_

How many staff? \_\_\_\_\_

How many days a week is the restaurant open? \_\_\_\_\_

1.7 Church

How many people attend services per week? \_\_\_\_\_

How many days per week are services held? \_\_\_\_\_

1.8 Public toilet

How many users per day? \_\_\_\_\_

How many users per week? \_\_\_\_\_

What are the hours of operation? \_\_\_\_\_

What is the cost for use? \_\_\_\_\_

Are there showers? \_\_\_\_\_

1.9 Other (specify): \_\_\_\_\_

How many users per day? \_\_\_\_\_

2. Describe toilets and use of the toilets

2.1 How would you classify this containment system?

Septic tank

Cesspit

Pit latrine

Other (specify): \_\_\_\_\_

2.2 How many toilets feed into this containment system? \_\_\_\_\_

2.3 What type of toilet(s) feed into this containment system? (select all that apply)

Flush toilet

- Pour-flush toilet
- Dry toilet
- Urine-diverting toilet
- 2.4 What type of anal cleansing material is used? (select all that apply)
  - Toilet paper
  - Water
  - Other (specify): \_\_\_\_\_
- 2.4.1 Are cleansing materials disposed of into the toilet?
  - Yes
  - No
- 2.5 What types of wastewater enter the containment system? (select all that apply)
  - Flush water
  - Bathing/washing water
  - Kitchen water
  - Other (specify): \_\_\_\_\_
- 2.5.1 Do you have a piped water connection?
  - Yes
  - No
- 2.5.2 If Yes, is your water connection shared (e.g. between multiple households or businesses)?
  - Yes
  - No
- 2.6 Does solid waste enter the faecal sludge containment system?
  - Yes
  - No
- 2.6.1 If Yes, what types of waste? (select all that apply)
  - Hygiene products
  - Food waste
  - Other (specify): \_\_\_\_\_

3. Describe your containment system

- 3.1 How old is your containment system?
  - Less than 1-year old
  - 1-5 years old
  - 5-10 years old
  - More than 10 years old
  - I don't know

Specify exact age (in years) if known: \_\_\_\_\_
- 3.2 How long has it been since the last time your system was emptied?
  - System has never been emptied before
  - Less than 1 year
  - 1 - 3 years
  - More than 5 years
  - I don't know

Specify exact time (in years) if known: \_\_\_\_\_
- 3.3 What is the volume of your containment system? \_\_\_\_\_
- 3.4 Who constructed your containment system?
  - I hired a professional to construct my containment system
  - I constructed my containment system myself or with the help of family/friends

I don't know

**Questions to providers of collection and transport services**

1. What is the volume of your truck?
2. Is the truck completely full following the emptying event?
  - Yes
  - No
  - 2.1 If No, how full is the truck?
    - Less than half full
    - More than half full
3. Was your truck partially full before emptying this system?
  - Yes
  - No
  - 3.1 If Yes, how full was the truck?
    - Less than half full
    - More than half full
4. Was the customer's onsite faecal sludge containment system fully emptied?
  - Yes
  - No
5. Did you add any water to the onsite faecal sludge containment system before emptying?
  - Yes
  - No
  - 5.1 If Yes, how much? \_\_\_\_\_
6. Describe the onsite collection and storage system:
  - 6.1 How would you classify this system?
    - Septic tank
    - Cesspit
    - Pit latrine
    - Other (specify): \_\_\_\_\_
  - 6.2 Does this user always call you to empty his system?
    - Yes
    - No
    - 6.2.1 If Yes, how long has it been since the last time you emptied it?
      - Less than 1 year
      - 1-3 years
      - More than 5 years
      - I don't know
  - 6.3 What types of difficulties have you encountered when emptying this containment system?
    - the system is full of solid waste
    - the sludge is compact
    - Other (specify): \_\_\_\_\_
    - 6.3.1 Where does the tank drain to?
      - Sewer
      - Leach pit
      - Open drain
      - Other (specify): \_\_\_\_\_
  - 6.4 Does the system have multiple chambers?

Yes

No

6.4.1 If Yes, how many chambers?

2

More than 2